

REMARKS

Claims 1-3 and 5-17 are pending in the application. Claim 11 has been amended. The amendment is fully supported by the original disclosure. No new matter has been introduced. Reconsideration and allowance of claims 1-3 and 5-17 in view of the following remarks is respectfully requested.

The amendment to claim 11:

In the present amendment, applicant requests that independent claim 11 be amended to make clearer that "said sensor" refers to "said intermediate sensor". Applicant believes that this amendment neither broadens or narrows the scope of claim 11, but merely adds more definite language to the claim. Accordingly, applicant requests that the amendment be entered.

The objection to the oath/declaration under 37 C.F.R. 1.33(a):

The examiner has objected to applicant's declaration for not providing a post office address for the applicant Leo T. Van Lahr. As previously noted by the applicant, C.F.R. § 1.33(a) only requires a correspondence address and does not requires a post office address. Applicant believes that the Revocation of Power of Attorney and appointment of a new Power of Attorney filed on October 24, 2002, provides a complete correspondence address as required by 37 C.F.R. 1.33(a).

Applicant notes, however, that the objection appears to be based on 37 C.F.R. 1.63(c)(1), although this is not stated in the office action. Regarding 37 C.F.R. 1.63, there is a requirement that the oath or declaration include both a mailing address and a residence "if an inventor lives at a location which is different from where the inventor customarily receives mail". Accordingly, the declaration of inventor Van Lahr indicates an address of 1308 So. Rimhurst

Avenue, Glendora, California 91740. Applicant asserts that this information meets the requirements of 37 C.F.R. 1.63. The rejection of claims 1, 2, 9-11 and 13-17 under 35 U.S.C. § 102:

Claims 1, 2, 9-11, and 13-17 stand rejected as anticipated by Peterson (U.S. Patent No. 3,485,100).

Applicant disagrees with the examiner's conclusion and traverses the rejection for the following reasons. For prior art references to be anticipated under 35 U.S.C. § 102, each and every element of the claimed invention must be identically shown in the reference. Peterson does not disclose the limitation found in independent claims 1, 11, 13 and 16 reciting a "thermally conductive substrate". The examiner states that Peterson discloses "a thermally conductive substrate (30)". However, Peterson (at column 4, lines 29-38) states that rod 30 is composed "insulating material". Thus, rod 30 of Peterson is incapable of anticipating the "thermally conductive substrate" recited in applicant's claims 1, 11, 13 and 16. Accordingly, these claims are not anticipated by Peterson.

Further, applicant submits that claims 1, 11, 13, and 16 are not rendered obvious by Peterson. Specifically cautions any attempt to cure Peterson of its above deficiencies in the 102 rejection will fail because Peterson explicitly teaches away from using a substrate that is "thermally conductive", since Peterson requires that rod 30 be composed of "insulating material" (Peterson at line 4, lines 29-31). Due to this teaching away, there can be no cure for Peterson's failure to teach or suggest all of the claim limitations of independent claims 1, 11, 13, and 16. Accordingly, these independent claims are not rendered obvious by Peterson.

Claims 2, 3, 9, 10, 12, 14, 15, and 17 are likewise not anticipated or rendered obvious by Peterson at least due to their dependency on independent claims 1, 11, 13, or 16.

Regarding independent claim 11, Peterson additionally does not disclose the limitation reciting that there be "upper, intermediate and lower sensors mounting on said substrate ... said intermediate sensor having a vertical dimension sufficiently large such that said temperature signal will vary in proportion to said longitudinal portion of said intermediate sensor thermally coupled to the liquid". The examiner cites resistors (26 or 28) of Peterson as being "an elongated temperature-dependent resistance sensor". However, Peterson states that these sensors "determine a certain number of definite levels" (Peterson column 4, lines 7-8) and that the resistors be "discreet" (column 4, line 10). Further, Peterson distinguishes these sensors from the resistor element 8 which has a resistance that "changes continuously with temperature" (Peterson column 3, lines 29-35). Accordingly, resistors 27 or 28 of Peterson do not meet the requirements of applicant's claim 11. Accordingly, independent claim 11 is not anticipated by Peterson. Additionally, claim 11 is not anticipated Peterson because does not disclose the limitation requiring that the upper and lower sensors "generate respective electrical signals each defining a temperature signal". The examiner cites the Peterson resistors 26 and 29 as teaching upper and lower temperature dependent resistance sensors. However, these sensors do not each define a temperature signal as required by applicant's claim 11; instead they operate in series to generate a single temperature signal. Accordingly, independent claim 11 is not anticipated by Peterson. Further, applicant submits that claim 11 is not rendered obvious by Peterson. Specifically,

applicant cautions any attempts to cure Peterson of its above deficiencies in the 102 rejection will fail because Peterson explicitly teaches wiring the resistors in series. Due to this teaching away, there can be no cure for Peterson's failure to teach or suggest all of the claim limitations of independent claim 11. Accordingly, independent claim 11 is not rendered obvious by Peterson.

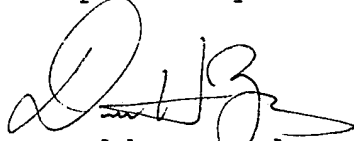
Dependent claim 12 is likewise not obvious due at least to its dependence on claim 11.

CONCLUSION

In view of the above amendments and remarks, applicant believes claims 1-3 and 5-17 are in condition for allowance, and applicant respectfully requests allowance of such claims. If any issues remain that may be expeditiously addressed in a telephone interview, the examiner is encouraged to telephone the undersigned at 515/558-0200.

Any fees or extensions of time believed to be due in connection with this amendment are enclosed with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 50-2098.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE MARCH 10, 2003

In the Claims:

Claim 11 has been amended as follows:

11. (Twice Amended) A system for detecting the level of liquid in a vessel, comprising:
a detector assembly including a thermally conductive substrate,
a heater mounted on said substrate such that said heater is thermally coupled to the interior of the vessel, said heater being able to be actuated to add heat to the surface of the substrate thermally coupled to the interior of the vessel, and
upper, intermediate and lower sensors mounted on said substrate in proximity to said heater, said upper sensor being at a higher elevation relative to said lower sensor, said intermediate sensor being at an elevation between said upper and lower sensors, said upper and lower sensors being thermally coupled to the interior of the vessel to detect the temperature therein in proximity to said upper and lower sensors, said upper and lower sensors being able to be actuated to generate respective electrical signals each defining a temperature signal indicative of said temperatures detected by said upper and lower sensors, said intermediate sensor being mounted on said substrate such that discrete elevations of the interior of the vessel are thermally coupled to corresponding longitudinal portions of said intermediate sensor to detect the temperature in the vessel in proximity to the sensor, said correspondence being incrementally continuous such

that the elevations corresponding to said portions of said intermediate sensor increase from one to the other of the ends of said intermediate sensor, said intermediate sensor being able to be actuated to generate an electrical signal defining a temperature signal indicative of the temperature detected by said intermediate sensor, said intermediate sensor having a vertical dimension sufficiently large such that said temperature signal will vary in proportion to said longitudinal portion of said intermediate sensor thermally coupled to the liquid;

a processor electrically connected to each of said sensors for receiving said temperature signals after actuation of said heater, said processor being programmed to use said temperature signals to calculate the elevation of the upper surface of the liquid in the vessel thereby to generate an electrical signal defining an elevation signal indicative of the elevation of the liquid upper surface;

an interface electrically connected to said processor for receiving said elevation signal for use as the basis for communicating to the user the elevation of the liquid upper surface; and

a power supply electrically connected to said heater, intermediate sensor, lower sensor, upper sensor, processor, and interface, and

wherein said intermediate sensor comprises a potentiometer wherein the resistance to electrical conductivity of said intermediate sensor varies in proportion to the temperature detected by it, said temperature signal being equal to said resistance, said programming of said processor comprising using said temperature signal to

measure said resistance of said intermediate sensor,
said programming further comprising using said
resistance to calculate the elevation of the liquid
upper surface.